Claims:

1. A method for acquiring a receiver (1) into a code modulated spread spectrum signal received by the receiver (1), in which method at least one replica code (r) is used which corresponds to a code used with the modulation having a pre-determined number of chips, and an examination phase is performed, in which a frequency shift of the signal within a selected frequency area is examined, and a code phase of the code used with the modulation is examined, **characterized** in that the frequency shift examination is divided into a first estimation phase and a second estimation phase, wherein in the first estimation phase the selected frequency area is divided into a first set of frequencies, and in the second estimation phase a second set of frequencies is examined nearby each frequency of the first set of frequencies, that a comparison for frequencies of the second set of frequencies is performed using the received signal and the replica code (r), and that the results of the comparison are used to estimate the correct frequency shift.

2. The method according to the claim 1, in which a reference oscillator signal is formed, **characterized** in that in each of the first estimation phases the received signal (x_n) is mixed with said reference oscillator signal, that the frequency of the reference oscillator is set into a different frequency for different first estimation phases, and that the mixed signal is used in the second estimation phase.

3. The method according to the claim 1, **characterized** in that a time-to-frequency transformation of a reversal of the replica code (r) is produced, that in each of the first estimation phase the transformed, reversed replica code (r) is shifted such that in different first estimation phases a different phase shift of the transformed, reversed replica code is used.

4. The method according to any one of the claims 1, 2 or 3, **characterized** in that the received signal is sampled for producing a set of samples (x_n), a matrix (X) is formed from the samples, the matrix (X) having a first dimension and a second dimension, which first dimension preferably equals the number of samples of the code period, and that the second estimation phase having the steps of performing a first time-

to-frequency transform on the matrix (X) in said second direction, and performing a second time-to-frequency transform on the time-to-frequency transformed matrix (X) in said first direction.

5. The method according to any one of the claims 1, 2 or 3, **characterized** in that the received signal is sampled for producing a set of samples (x_n), a matrix (X) is formed from the samples, the matrix (X) having a first dimension and a second dimension, which first dimension preferably equals the number of chips of the code, a compensation matrix (C) is formed, and that the second estimation phase having the steps of performing a first time-to-frequency transform on the matrix (X) in said second direction, multiplying the time-to-frequency transformed matrix (X) with the compensation matrix (C) to form a compensated matrix (CX), and performing a second time-to-frequency transform on the compensated matrix (CX) in said first direction.

6. The method according to any one of the claims 4 or 5, **characterized** in that a time-to-frequency transform is performed on the reversed replica code (r), the time-to-frequency transformed replica code (R) is multiplied with the resulting matrix of the second time-to-frequency transformation, a frequency-to-time transform is performed on the resulting matrix of the multiplication.

7. The method according to the claim 6, **characterized** in that a non-coherent processing is performed on at least one frequency-to-time transformed matrix, in which non-coherent processing a maximum value is searched for finding a correct frequency shift and code phase.

8. A location system comprising at least
- a receiver (1) having means (24, 25) for receiving code modulated spread spectrum signal,
- means (6) for acquiring the receiver (1) into the received signal,
- means (18) for using at least one replica code (r) which corresponds to a code used with the modulation, which code having a pre-determined number of chips, and
- examination means (4, 6, 36) for examining a frequency shift of the signal within a selected frequency area, and a code phase of the code used with the modulation,

characterized in that the examination of the frequency shift is divided into a first estimation phase and a second estimation phase, wherein the location system further comprises

- means (4, 18, 36) for dividing the selected frequency area into a first set of frequencies for the first estimation phase,
- means (11) for examining a second set of frequencies nearby each frequency of the first set of frequencies in the second estimation phase, and
- means (16) for performing a comparison for frequencies of the second set of frequencies by using the received signal and the replica code (r),

and that the examination means comprise means (21, 22) for evaluating the correct frequency shift by using the results of the comparison.

9. The location system according to the claim 8 further comprising a reference oscillator (4) for producing a reference oscillator signal, **characterized** in that the location system further comprises

- means (36) for mixing the received signal (x_n) with said reference oscillator signal in the first estimation phases, and
- means (7, 8, SW2) for adjusting the frequency of the reference oscillator into a different frequency for different first estimation phases,

and that the mixed signal is arranged to be used in the second estimation phase.

10. The location system according to the claim 8, **characterized** in that it comprises means (18) for producing a time-to-frequency transformation of a reversal of the replica code (r), and for shifting the transformed, reversed replica code (r) in each of the first estimation phase such that in different first estimation phases a different phase shift of the transformed, reversed replica code is arranged to be used.

11. The location system according to any one of the claims 8, 9 or 10, **characterized** in that it comprises

- means (5) for sampling the received signal for producing a set of samples (x_n),

- means (6) for forming a matrix (X) from the samples, the matrix (X) having a first dimension and a second dimension, which first dimension preferably equals the number of samples of the code period,
- means (12) for performing a first time-to-frequency transform on the matrix (X) in said second direction, and
- means (15) for performing a second time-to-frequency transform on the time-to-frequency transformed matrix (X) in said first direction.

12. The location system according to any one of the claims 8, 9 or 10, **characterized** in that it comprises

- means (5) for sampling the received signal for producing a set of samples (x_n),
- means (6) for forming a matrix (X) from the samples, the matrix (X) having a first dimension and a second dimension, which first dimension preferably equals the number of samples of the code period,
- means (13) for forming a compensation matrix (C),
- means (14) for multiplying the time-to-frequency transformed matrix (X) with the compensation matrix (C) to form a compensated matrix (CX), and
- means (15) for performing a second time-to-frequency transform on the compensated matrix (CX) in said first direction.

13. The location system according to any one of the claims 11 or 12, **characterized** in that it comprises

- means (18) for forming a time-to-frequency transformed reversed replica code (R),
- means (14) for multiplying the time-to-frequency transformed reversed replica code (R) with the resulting matrix of the second time-to-frequency transformation, and
- means (15) for performing a frequency-to-time transform is performed on the resulting matrix of the multiplication.

14. The location system according to the claim 13, **characterized** in that it comprises means (18) for performing a non-coherent processing on the frequency-to-time transformed matrix, in which non-coherent

processing a maximum value is arranged to be searched for finding a correct frequency shift and code phase.

15. A receiver (1) comprising at least
- means (24, 25) for receiving code modulated spread spectrum signal,
- means (6) for acquiring the receiver (1) into the received signal,
- means (18) for using at least one replica code (r) which corresponds to a code used with the modulation, which code having a predetermined number of chips, and
- examination means (4, 6, 36) for examining a frequency shift of the signal within a selected frequency area, and a code phase of the code used with the modulation,

characterized in that the examination of the frequency shift is divided into a first estimation phase and a second estimation phase, wherein the receiver (1) further comprises
- means (4, 18, 36) for dividing the selected frequency area into a first set of frequencies for the first estimation phase,
- means (11) for examining a second set of frequencies nearby each frequency of the first set of frequencies in the second estimation phase, and
- means (16) for performing a comparison for frequencies of the second set of frequencies by using the received signal and the replica code (r),

and that the examination means comprise means (21, 22) for evaluating the correct frequency shift by using the results of the comparison.

16. The receiver (1) according to the claim 15 further comprising a reference oscillator (4) for producing a reference oscillator signal, **characterized** in that the receiver (1) further comprises
- means (36) for mixing the received signal (x_n) with said reference oscillator signal in the first estimation phases, and
- means (7, 8, SW2) for adjusting the frequency of the reference oscillator into a different frequency for different first estimation phases,

and that the mixed signal is arranged to be used in the second estimation phase.

17. The receiver (1) according to the claim 15, **characterized** in that it comprises means (18) for producing a time-to-frequency transformation of a reversal of the replica code (r), and for shifting the transformed, reversed replica code (r) in each of the first estimation phase such that in different first estimation phases a different phase shift of the transformed, reversed replica code is arranged to be used.

18. The receiver (1) according to any one of the claims 15, 16 or 17, **characterized** in that it comprises
- means (5) for sampling the received signal for producing a set of samples (x_n),
- means (6) for forming a matrix (X) from the samples, the matrix (X) having a first dimension and a second dimension, which first dimension preferably equals the number of samples of the code period,
- means (12) for performing a first time-to-frequency transform on the matrix (X) in said second direction, and
- means (15) for performing a second time-to-frequency transform on the time-to-frequency transformed matrix (X) in said first direction.

19. The receiver (1) according to any one of the claims 15, 16 or 17, **characterized** in that it comprises
- means (5) for sampling the received signal for producing a set of samples (x_n),
- means (6) for forming a matrix (X) from the samples, the matrix (X) having a first dimension and a second dimension, which first dimension preferably equals the number of samples of the code period,
- means (13) for forming a compensation matrix (C),
- means (14) for multiplying the time-to-frequency transformed matrix (X) with the compensation matrix (C) to form a compensated matrix (CX), and
- means (15) for performing a second time-to-frequency transform on the compensated matrix (CX) in said first direction.

20. The receiver (1) according to any one of the claims 18 or 19, **characterized** in that it comprises

- means (18) for forming a time-to-frequency transformed reversed replica code (R),
- means (14) for multiplying the time-to-frequency transformed reversed replica code (R) with the resulting matrix of the second time-to-frequency transformation, and
- means (15) for performing a frequency-to-time transform is performed on the resulting matrix of the multiplication.

21. The receiver (1) according to the claim 20, **characterized** in that it comprises means (18) for performing a non-coherent processing on the frequency-to-time transformed matrix, in which non-coherent processing a maximum value is arranged to be searched for finding a correct frequency shift and code phase.

22. An electronic device (23) comprising at least
- a receiver (1) having means (24, 25) for receiving code modulated spread spectrum signal,
- means (6) for acquiring the receiver (1) into the received signal,
- means (18) for using at least one replica code (r) which corresponds to a code used with the modulation, which code having a pre-determined number of chips, and
- examination means (4, 6, 36) for examining a frequency shift of the signal within a selected frequency area, and a code phase of the code used with the modulation,

characterized in that the examination of the frequency shift is divided into a first estimation phase and a second estimation phase, wherein the electronic device (23) further comprises
- means (4, 18, 36) for dividing the selected frequency area into a first set of frequencies for the first estimation phase,
- means (11) for examining a second set of frequencies nearby each frequency of the first set of frequencies in the second estimation phase, and
- means (16) for performing a comparison for frequencies of the second set of frequencies by using the received signal and the replica code (r),

and that the examination means comprise means (21, 22) for evaluating the correct frequency shift by using the results of the comparison.

23. The electronic device (23) according to the claim 22, **characterized** in that it further comprises means (33, 34) for communicating with a mobile communication network.